REMARKS

1. **Rejection of claims 1, 4, 13, 14-16, and 19-23 under 35 U.S.C. §112, 2nd paragraph; Rejections A-F.**

Claims 1, 4, 13, 14-16, and 19-23 stand rejected as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicants regard as the invention.

A. Claims 1, 15, and 16 stand rejected for use of the abbreviation "UV", which the PTO notes should be replaced with "ultraviolet".

Applicants appreciate the PTO's suggestion and note that appropriate amendments have been made in all claims previously containing "UV". Reconsideration and removal of the rejection is respectfully requested.

B. Claim 4 is said to lack antecedent basis for the ration "less than 1.00" since claim 5 recites a ratio of "from 0.75 to 1.00" and 1.00 is not "less than 1.00".

Applicants must respectfully disagree with the PTO's position in regards to claims 4 and 5. Claim 4 does not lack antecedent basis as it depends from claim 1, which recites a ratio of "less than 1.30". Nor does claim 5 does lack for antecedent basis as it depends from claim 3, which recites a ratio of "0.75 to 1.10". Reconsideration and removal of the rejection is respectfully requested.

C. Claim 19 stands rejected for recitation of the abbreviations "SMC" and "BMC".

Claim 19 has been amended to respectively replace "SMC" and "BMC" with "fiber reinforced sheet molded compound" and "fiber reinforced bulk molded compound". Support for this amendment may be found on page 1, lines 24-26 of the Specification. Reconsideration and removal of the rejection is respectfully requested.

D. Claim 13 stands rejected for recitation of "5% by". It is noted that some words appear to be missing.

Applicants appreciate the PTO's recognition of this typographical error. The word "weight" should have followed "5% by". The claim has been amended appropriately. Support for this amendment may be found on page 13, line 24. Reconsideration and removal of the rejection is respectfully requested.

E. Claims 14 and 20-23 stand rejected for reciting a method of making a coated substrate but failing to set forth how the coating is obtained from the composition applied to the substrate. It is the PTO's position that "[a] method step for curing the uncured composition must be set forth to provide a "coated substrate". If not, the claims set forth a substrate having an uncured composition thereon." *(Office Action of 11/20/02, page 2, 2nd paragraph.)*

Applicants appreciate the detailed basis of rejection but must respectfully disagree. As allowed by doctrine of claim differentiation, Applicants intentionally distinguished between a "coated substrate" and that of a "cured coated substrate". Applicants respectfully note that the application of a coating composition to a substrate produces a coated substrate.

As noted above, the doctrine of claim differentiation supports this interpretation of Applicants' claim 14. For example, Applicants' claim 15 adds the step of subjecting the coated substrate of claim 14 to UV radiation so as to produce a UV *cured* coated substrate. Also, claim 16 adds the step of subjecting the UV cured coated substrate of claim 15 to heat so as to produce a UV and thermally cured coated substrate. Likewise, these terms are also consistently used in dependent claims 20-23.

The first sentence of the second paragraph of Section 112 is a requirement for precision and definiteness of claim language. If the scope of subject matter embraced by a claim is clear and if the applicant has not otherwise indicated that he intends the claim to be of a different scope, then the claim particularly points out and distinctly claims the subject matter that the applicant regards as his invention. *In re Borkowski et al.*, 164 USPQ 642, (CCPA 1970)

It is respectfully submitted that this standard is met by a reading of all of Applicants' claims and Specification. Reconsideration and removal of the rejection is respectfully requested.

F. Claims 20, 21, 22 and 23 are said to be confusing.

Claims 20, 21, 22, and 23 are said to be confusing because it is not clear what Applicants intend to add to the methods of the claims which they depend.

In response, Applicants note that these claims highlight the fact that the coating compositions of the invention are useful in the production of composite coatings

containing multiple layers, i.e., primer(s), basecoats, topcoats, and/or clearcoats. Such additional coating may be added to the either the UV cured coated substrate or the UV and thermally cured coated substrate. For example, in claim 20 an additional coating layer is added or coated on to the UV cured coated substrate of claim 15. Similarly, in claim 21, an additional coating layer is added to the UV and thermally cured coated substrate of claim 16.

Such embodiments are taught in Applicants' Specification. As disclosed in Applicants' Specification on page 29, paragraph [000124], page 30, paragraph [00130], page 31, paragraph [00136], and pages 33-34, paragraphs [000142]-[000143], both the UV cured coated substrates and UV and thermally cured coated substrates can be overcoated with other coating compositions. As noted in paragraph [000124], joint thermal curing can be employed in some embodiments.

As a result, it is respectfully submitted that claims 20, 21, 22, and 23 are clear to one of skill in the art, are not indefinite or confusing, and satisfy the requirements of the 2nd paragraph of 35 USC 112.

Reconsideration and removal of the rejection as to claims 20, 21, 22, and 23 is respectfully requested.

2. **Rejection of claims 1-6, and 14-25 under 35 U.S.C. §103(a) as obvious over Lahrmann et al., U.S. Patent 5,425970, (hereafter "Lahrmann" or "'970").**

Applicants greatly appreciate the detailed basis of rejection but must respectfully disagree.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP 2143*

Lahrmann does not meet this standard.

Lahrmann teaches a process for the production of multi-coat lacquers that requires the use of two *separate* clearcoats. At least one of the clearcoats must be a heat-curable clearcoat while '...at least one *further* clear lacquer coat' must be applied

that is a radiation-curable coating which is cured by UV radiation or electron beam radiation. *See '970, Abstract and claim 1.*

Thus, it is an operational principle of Lahrmann that two separate clearcoats be used, one that is heat cured and one that is cured with UV radiation or electron beam. In contrast, Applicants' invention requires the recognition that these functions can be combined in a *single* coating composition. In order to get Applicants' invention from Lahrmann, one of skill in the art would first have to recognize the problems solved by Applicants' invention, and second to appreciate that the solution to such problems lay in the use of a single coating having *both* a UV curable binder component (Applicants' component (a1)) *and* a thermally curable binder component (Applicants' component (a2)).

Lahrmann does not recognize the problems addressed by Applicants' invention. As noted in Applicants' Specification:

> Efforts to use coatings curable solely with the use of actinic radiation have encountered other problems. Actinic radiation as used herein refers to electromagnetic radiation such as UV radiation or X-rays, as well as to corpuscular radiation such as electron beams. The unique contours and configurations of many shaped porous articles result in three-dimensional articles having 'shadow' zones or areas that are obscured from direct irradiance from the chosen energy source. Thus, the use of coatings cured via actinic energy sources can result in uncured or partially cured coating films in those shadow areas not visible to one or more of the energy sources. Alternatively, increased expense may be incurred due to the procurement of additional actinic energy sources in an effort to 'reach' all shadow areas. It will be appreciated that in many instances, manufacturing constraints will limit the number and/or location of actinic energy sources. Also, in many cases the overspray does not cure due to oxygen inhibition caused by the large surface area ratio of the particle and any dispersed oxygen within the particle.
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> *(Applicants' Specification, page 2, paragraph [0007])*

These problems would not be resolved by Lahrmann's use of two separate coatings. A reference that performs a step of a claimed process for a different purpose and does not recognize the problem solved in applicants' process does not render the process obvious. *Ex parte Wisdom et al.*, 184 U.S.P.Q. 822 (POBA 1973)

Nor does Lahrmann provide any motivation or suggestion to solve these problems in the particular manner developed by Applicants, i.e., with the use of a single

coating having *both* a UV curable binder component (Applicants' component (a1)) *and* a thermally curable binder component (Applicants' component (a2)). Without such a motivation, Lahrmann cannot provide a prima facie case of obviousness. A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. In re Rinehart, 189 USPQ 143 (CCPA 1976) There is no suggestion in Lahrmann to do what Applicants have done.

Indeed, modification of the process of Lahrmann so as to obtain Applicants' claimed process would change the basic nature and principle of operation of the invention set forth in the '970 patent. This fact supports Applicants' position that the '970 patent alone fails to provide a prima facie case of obviousness. If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti,* 123 USPQ 349 (CCPA 1959); MPEP 2143.01

It is the PTO's position that Example 6 of the '970 patent teaches the use of a composition containing Applicants' components (a1) and (a3) and that it would be obvious to include a non-radiation curable binder containing isocyanate reactive groups because Example 6 uses a polyisocyanate.

Applicants' must respectfully disagree with this argument for several reasons.

First, the motivation must come from the reference, not from the PTO with the benefit of hindsight from Applicants' invention. Even if the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the *desirability* of such a modification. *In re Laskowski,* 10 U.S.P.Q.2d 1397, 1398 (Fed Cir. 1989).

The polyisocyanate in Example 6 is used to react with the hydroxyl functionality of the radiation curable component. Why would one of skill in the art add in something else for reaction with the polyisocyanate? The resulting crosslinks are taught to be all that is necessary to achieve the stated performance goals. In the absence of any teaching to do so, the additional of another binder crosslinkable with the polysisocyanate is merely an application of the prohibited "obvious to try" standard.

"Obvious to try" is not a valid test of patentability. *In re Mercier*, 185 U.S.P.Q. 774 (CCPA 1975) Patentability determinations based on that as a test are contrary to statute. *In re Antonie*, 195 U.S.P.Q. 6 (CCPA 1977)

Second, there is no motivation in Lahrmann to use the particular thermally curable binder required in Applicants' claimed invention, i.e., a thermally curable binder having no functional bonds activatable upon exposure to ultraviolet radiation. No suggestion as to how this particular aspect of Applicants' invention results from Lahrmann has been offered. Limitations in claims distinguishing over the prior art cannot be ignored. *In re Boe et al.*, 184 USPQ 38 (CCPA 1974)

Finally, Applicants must disagree that

> ...it would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application because chemical crosslinking of isocyanate groups and isocyanate reactive groups is well known in the art.
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> *(Office Action of 11/20/03, page 4)*

The statement that something is well known in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than the mere optimization of the extent of crosslinking. Rather, it involves the recognition that two different components, one thermally crosslinkable and one radiation crosslinkable, must *both* have isocyanate reactive groups and that it is the sum of those two different sets of groups to NCO groups that must be less than 1.30. As discussed above, Lahrmann fails to recognize or suggest the importance of Applicants' component (a2), let alone the importance of the ratio of NCO to the isocyanate reactive groups of *both* components (a1) and (a2).

Accordingly, it is respectfully submitted that Lahrmann fails to provide a prima facie case of obviousness as to independent claim 1 and likewise to those dependent claims that incorporate the limitations of claim 1. Reconsideration and removal of the rejection is respectfully requested.

3. **Rejection of claims 1-6, and 14-25 under 35 U.S.C. §103(a) as obvious over Sirkoch et al., U.S. Patent 4,634,602, (hereafter "Sirkoch" or "'602").**

The basis of rejection is understood to be as follows:

> It would have been obvious to one skilled in the art at the time of the invention to include ethylenically unsaturated polyurethanes having hydroxy functional groups in the compositions disclosed by Sirkoch et al. as taught in Example 1. ...It would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application because chemical crosslinking of isocyanate groups and isocyanate reactive groups is well known in the art.
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> *(Office Action of 11/20/03, page 5)*

It is admitted that Sirkoch does not require that the radiation sensitive compound contain hydroxyl groups or other isocyanate-reactive groups or teach a required ratio of isocyanate groups to reactive functional groups.

Applicants appreciate the detailed basis of rejection but must respectfully disagree with respect to amended independent claim 1.

Sirkoch does not disclose a key limitation required by Applicants' invention of amended independent claim 1. For example, claim 1 as amended requires a particular ratio of NCO groups to the sum of the isocyanate reactive groups of both the radiation curable component (a1) and the thermally curable component (a2).

With respect to the NCO ratio, the PTO has again stated that

> ...it would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application because chemical crosslinking of isocyanate groups and isocyanate reactive groups is well known in the art.
>
> *(Office Action of 11/20/03, page 5)*

Applicants must again disagree.

The statement that something is well known in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than the mere optimization of the extent of crosslinking. Rather, it involves the recognition that two different components, one thermally crosslinkable and one radiation crosslinkable, must *both* have isocyanate reactive groups and that it is the <u>sum</u> of those two different sets of groups to NCO groups that must be less than 1.30.

In contrast, Sirkoch is silent as to any need to control the ratio of NCO to the isocyanate reactive groups present in the radiation insensitive and radiation sensitive compounds. Rather, Sirkoch actually teaches that the crosslinking component may consist wholly of aminoplast. *Sirkoch, col. 8, lines 60-63.* In fact, in preferred embodiment, the coating composition of the '602 patent will contain aminoplast in amount between 3 and 10 percent, based on resin solids.

Thus, Sirkock leads one of skill in the art away from the recognition that a certain amount of urethane bonds must link the crosslinking component to the radiation curable component and the thermally curable component.

A reference that leads one of skill in the art away from the claimed invention cannot provide a prima facie case of obviousness. For example, the Federal Circuit has clearly stated that "each prior art reference must be evaluated as an entirety, and ...all of the prior art must be evaluated as a whole". *In re Fritch,* 23 USPQ2d 1780, 1782. (Fed. Cir. 1992). And particularly on point, the CCPA had earlier said "[t]he test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art." *In re Keller,* 108 USPQ 871, 881 (CCPA 1981).

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to amended claim 1 and the dependent claims incorporating the limitations of claim 1.

4. **Rejection of claims 1-25 under 35 U.S.C. §103(a) as obvious over DE 99 333, (hereafter "'333").**

DE '333 is said to disclose compositions for SMC and BMC coatings that comprise a component (a1) corresponding to Applicants' component (a1), a component (a2) corresponding to Applicants' component (a3), and a component (a7) corresponding to Applicants' component (a2).

As a preliminary matter, it is noted that the German patent application DE 10113884.9 is not available as a reference until its international filing date. DE 10113884.9 was filed at the German Patent and Trademark Office on March 21, 2001.

The corresponding PCT application was filed on March 21, 2002. Accordingly, this reference may not be used against the instant application. A copy of the face page of the PCT application is submitted herewith.

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to claims 1-25.

5. **Rejection of claims 1-25 under 35 U.S.C. §103(a) as obvious over DE 99 141, (hereafter "'144").**

DE '144 is said to disclose compositions for SMC and BMC coatings that comprise a component (a1) corresponding to Applicants' component (a1), a component (a2) corresponding to Applicants' component (a3), and a component (a7) corresponding to Applicants' component (a2).

It is admitted by the PTO that DE '144 does not disclose or teach the required ratio of isocyanate groups to isocyanate reactive functional groups.

However, it is the PTO's position that

> [i]t would have been obvious to one skilled in the art at the time of the invention to determine the ratio required in order to obtain the extent of crosslinking desired for a particular application because chemical crosslinking of isocyanate groups and isocyanate reactive groups and the effects thereof are well known in the art.
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> *(Office Action of 11/20/02, pages 6 & 7)*

Applicants appreciate the detailed basis of rejection but must respectfully disagree.

DE '144 does not teach or suggest a dual cure coating composition wherein the crosslinking agent must be substantially free of the bonds that facilitate cure by electromagnetic or actinic radiation.

Rather, expressly DE '144 leads one of skill in the art away from such an invention. Indeed, the teachings of DE '144 are contra to any recognition that it would advantageous to eliminate the functional groups activated by actinic radiation from the crosslinking component of the dual cure system.

Thus, the '144 reference fails to provide a prima facie case of obviousness because (i) it fails to disclose all of the required limitations of the claimed invention and

(ii) fails to provide any motivation to modify its invention so as to obtain Applicants' claimed invention.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka,* 180 USPQ 580 (CCPA 1974); *MPEP 1243.03* Also, there must be a teaching in the prior art for the proposed combination or modification to be proper. *In re Newell,* 13 U.S.P.Q.2d 1248 (Fed Cir. 1989) DE '144 does not meet these standards.

Second, with respect to the NCO ratio, the statement that something is well known or obvious in the art does not supply the motivation necessary for a prima facie case of obviousness. Most importantly, Applicants' claimed invention involves more than the mere optimization of the extent of crosslinking. Rather, as noted above, it involves the recognition that two different components, one thermally crosslinkable and one radiation crosslinkable, must *both* have isocyanate reactive groups and that it is the sum of those two different sets of groups to NCO groups that must be less than 1.30.

In contrast, DE '144 teaches only that the ratio of the isocyanate reactive groups (a12) to the isocyanate groups (a22) that should be considered. DE '144 is thus silent as to any need to control the ratio of NCO to the isocyanate reactive groups present in both component (a1) and optional component (a7). Indeed, the fact that component (a7) is optional in DE '144 indicates that it fails to recognize the importance of the urethane links with the solely thermally curable component (a7).

Thus, DE '144 leads one of skill in the art away from the recognition that a certain amount of urethane bonds *must* link a solely thermally curable crosslinking component to both the radiation curable component *and* the thermally curable component.

Rather DE '144 motivates one of skill in the to think that a solely thermally curable binder component is merely optional and that a particular amount of urethane crosslinks to a solely thermally curable crosslinking component is neither desired or required to obtain an advantageous coating composition.

A reference that leads one of skill in the art away from the claimed invention cannot provide a prima facie case of obviousness. For example, the Federal Circuit has clearly stated that "each prior art reference must be evaluated as an entirety, and

...all of the prior art must be evaluated as a whole". *In re Fritch*, 23 USPQ2d 1780, 1782. (Fed. Cir. 1992).

An evaluation of DE '144 indicates that it does not motivate one of skill in the art to do what Applicants have done. As such, it fails to provide a prima facie case of obviousness per MPEP 2143.

Accordingly, reconsideration and removal of the rejection is respectfully requested with respect to amended claim 1 and the dependent claims incorporating the limitations of claim 1.

6. **Double Patenting Rejection.**

Claims 1-25 have been provisionally rejected under the judicially created doctrine of obviousness type double patenting over each of claims 1-30 of copending Application No. 09/941118, claims 1-32 of copending Application No. 09/941283, and claims 1-30 of copending Application No. 09/941295.

In response, Applicants hereby file terminal disclaimers under 37 CFR 1.321 (c) with respect to each of the above copending Applications. All of the cited copending Applications and the instant Application are commonly owned, i.e., all said applications are assigned to BASF Corporation, as indicated by the attached assignments.

Accordingly, reconsideration and removal of the rejections is respectfully requested with respect to claims 1-25.

Respectfully Submitted,

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